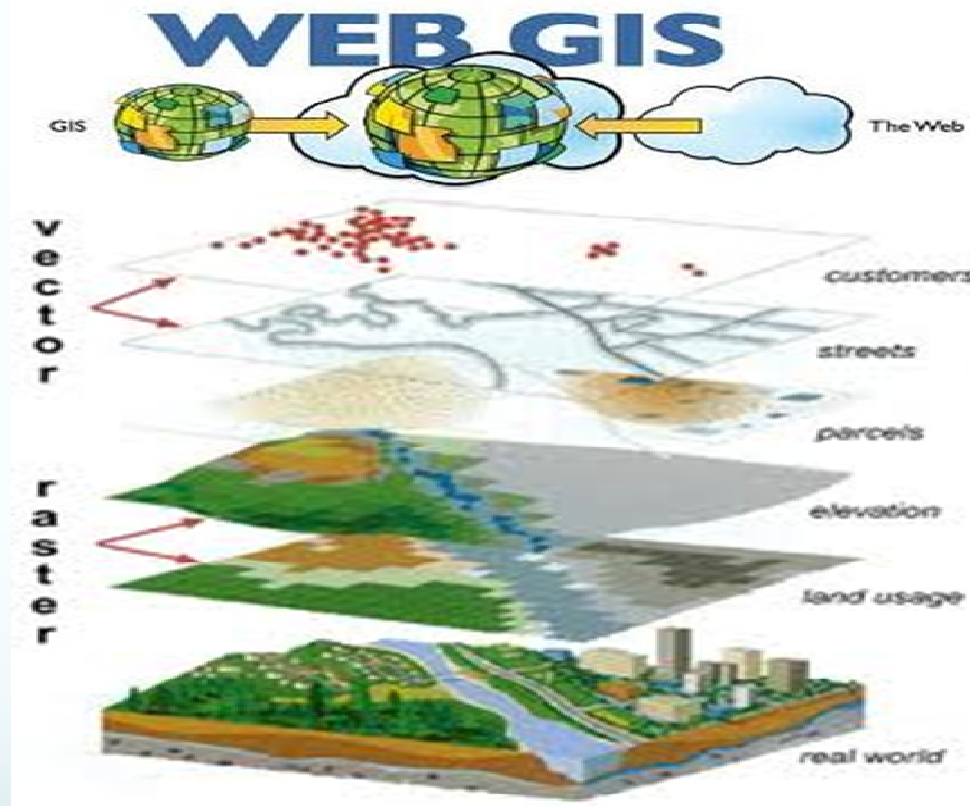


Development of Web Based Natural Resource Data Sharing and Decision Support System Using Open Source Tools

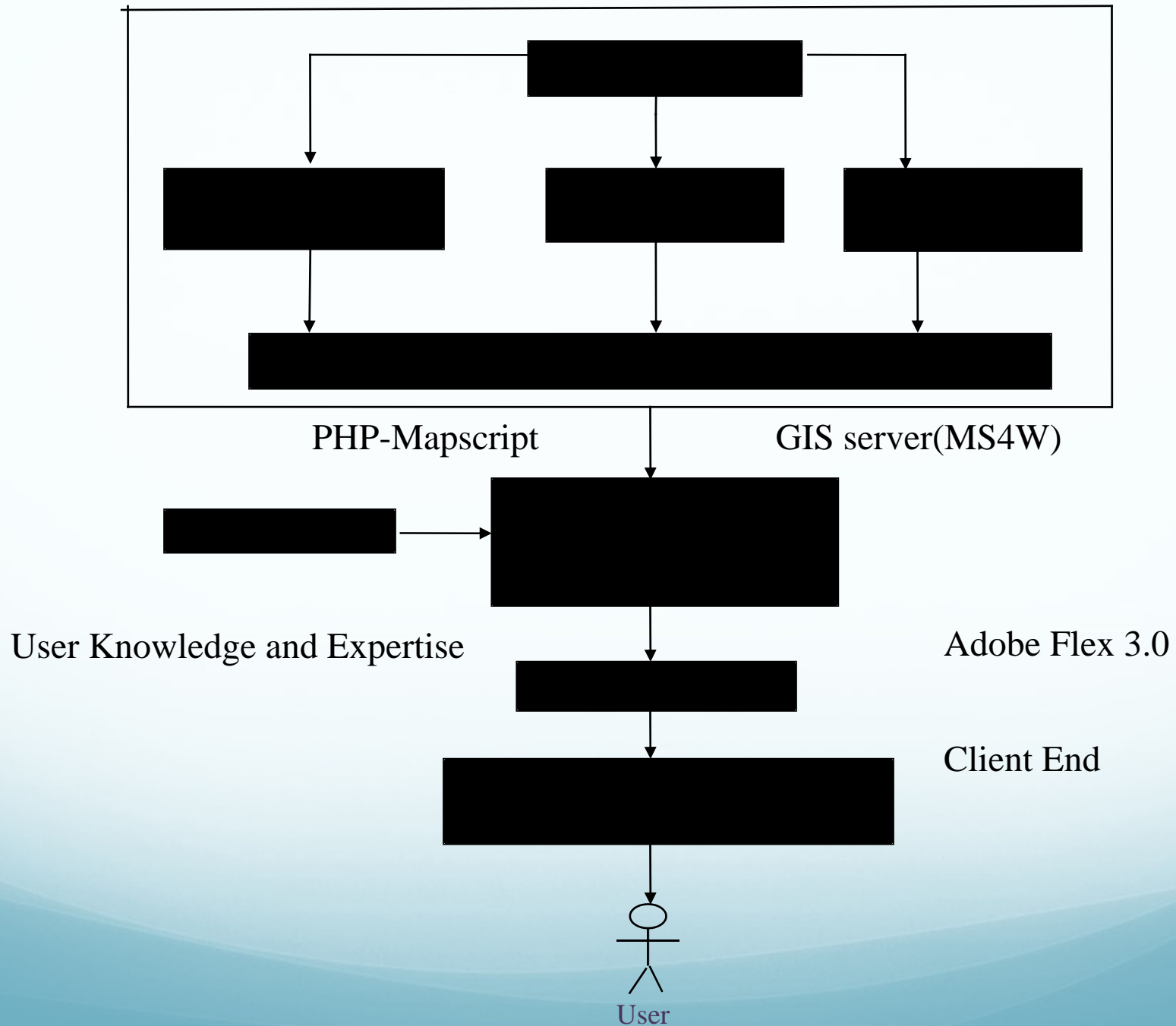




Introduction

- The web enabled DSS would provide an **Interface** to analyze thematic natural resource maps and the secondary data from various sources.
- Web based spatial decision support system(SDSS) using open source tools, which is interactive, user friendly and versatile to handle spatial problems using single or multi-criteria decisions. The utility developed is able to handle n numbers of vector and raster layers available on client/server and can take desired output.

HOW WEB DSS WORKS





Open source Tools/Software identified for the Application

- Front End Software/
Languages : HTML, JAVA , AJAX, FLEX, WEB Browser, GML.
- Server Technologies : Map-Server (MS4W)
- Database : PostGIS, PostgreSQL 8.2 & 9.1
- Server End Language : PHP mapscript, Python
- Geospatial Libraries : Geospatial Data Abstraction Library (GDAL)/OGR.

Decision Support System - Home Page



W EB ENABLED DSS

WEB GIS - A Tool that helps us to shape the world at

- Home
- Action Plan
- Thematic Map
- DSS
- Raster Analysis
- Contact Us

Username :

Password :

[New user? Register here](#)

Natural resources play an important role in the economic growth and development of the region, more so, the degree of development is a function of natural resources, its utilization and sustenance for future population needs. Natural resources are not only limited but some of them are not renewable. Therefore it is necessary to manage our natural resources scientifically and in such a way that the balance between their consumption and replenishment can be maintained to ensure their availability for future generations. This system will provide metadata available with the database and facilitates user to get data as per requirement from a common system. The data is catalogued systematically and mechanism of data access is tailored user. All databases are in interoperable data formats, which meet the universal standards. The present system is developed for visualization and dissemination of data through internet with open geospatial consortium (OGC) standard.

12:43
15-03-2012

Decision Support System

The screenshot displays a web browser window with the URL `http://127.0.0.1/project_webdss/dgprintinterface2.html`. The browser's address bar shows `127.0.0.1`. The interface features a navigation menu at the top with the following items: Home, Query Builder, Table, Label, Legend, Chart, Refresh, Print, and Help.

The main content area is divided into several sections:

- Map View:** A central map showing a geographical area with various colored overlays. A north arrow is located in the top right corner of the map. A scale bar at the bottom indicates a range from 0 to 4500 meters. An inset map in the bottom left shows the location of the main map area within a larger regional context.
- Legends:** A panel on the left side of the map view, titled "Legends", lists several data layers with corresponding symbols:
 - village_Her
 - village_point
 - Boundary
 - Road
 - Rail
 - Drainage
 - Village
 - Geomorphology
 - Lithology
 - Slope
 - GroundWater
- Layers:** A panel on the right side of the map view, titled "Layers", lists the same data layers with checkboxes and control icons. All layers are currently checked:
 - Boundary
 - Road
 - Rail
 - Drainage
 - Village
 - Geomorphology
 - Lithology
 - Slope
 - GroundWater
- Raster:** A section below the Layers panel, titled "Raster", contains a single checked item:
 - Dungarpur
- Refresh:** A button labeled "Refresh" is located at the bottom of the Layers and Raster panels.

The Windows taskbar at the bottom of the screen shows the system clock as 10:04 on 21-03-2012. The taskbar includes icons for the Start button, Internet Explorer, and several application windows.

WEB - DSS



Raster Image Analysis

Query Builder

WFS Implementation

Buffer Analysis

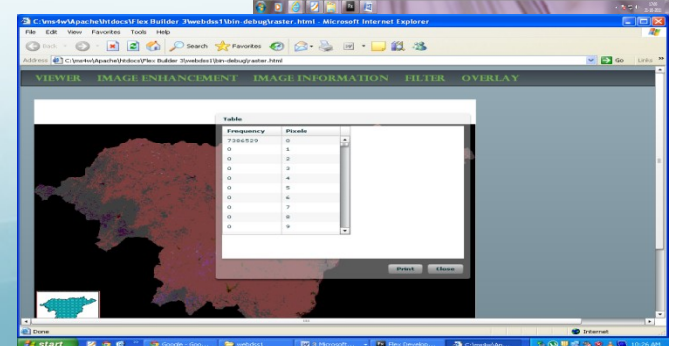
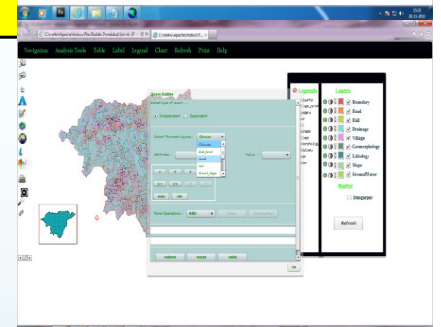
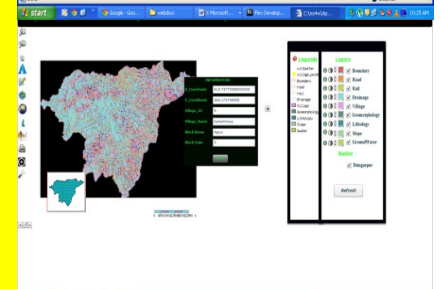
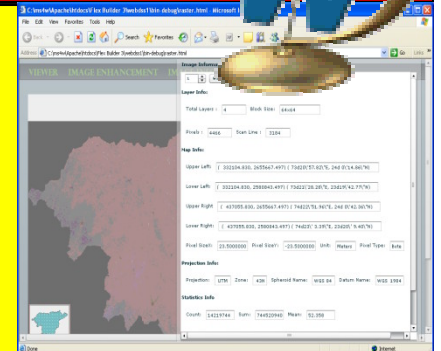
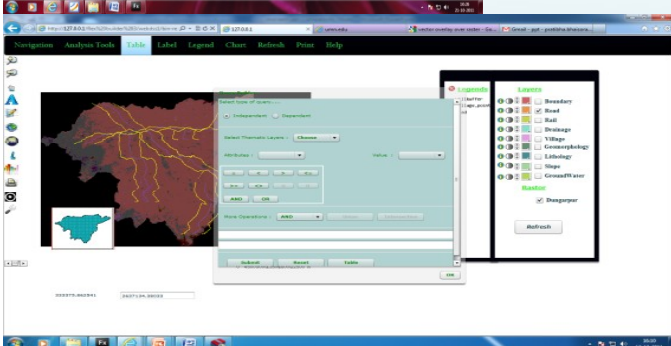
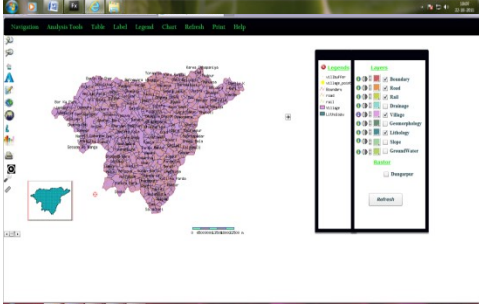
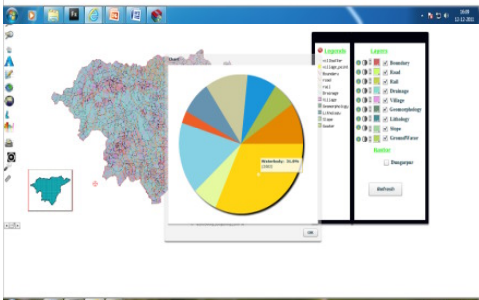
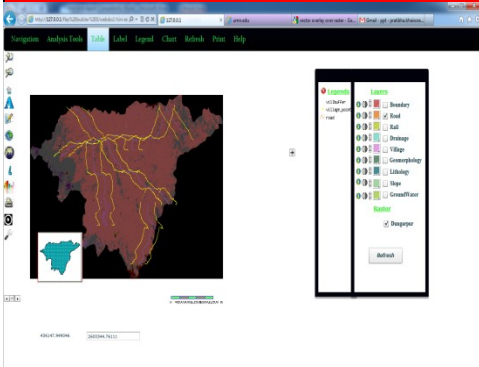
Draw Chart

Draw Image Pixels Table

Legend Editor

Raster Vector Overlay

↑ Analysis



Tool Bar



C:\Documents and Settings\ND\My Documents\Flex Builder 3\webdss1\bin-debug\Dgpr_Main_Interface. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Mail Print W File Folder

My Web Search Search Address settings\ND\My Documents\Flex Builder 3\webdss1\bin-debug\Dgpr_Main_Interface.html Go Links I >>

Google Search Share Sidewiki Check Translate Sign In

Navigation Query Tabel Label Legend Chart Refresh Print Help

Zoom in Zoom Out Pan Label Editor Query Builder Initial Map Show reference map Show Legends Chart Print

Legends

- Boundary
- road
- rail
- Drainage
- Village
- Geomorphology
- Lithology
- Slope
- Gwater

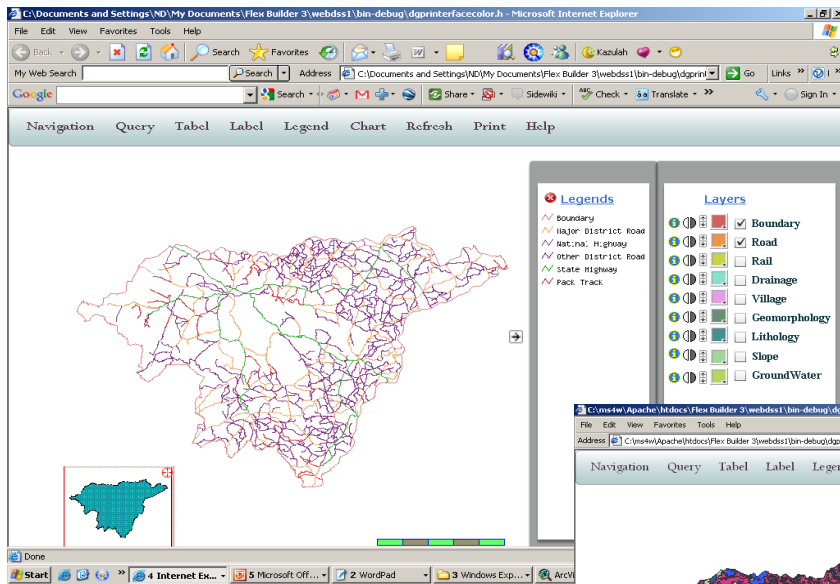
Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geomorphology
- Lithology
- Slope
- GroundWater

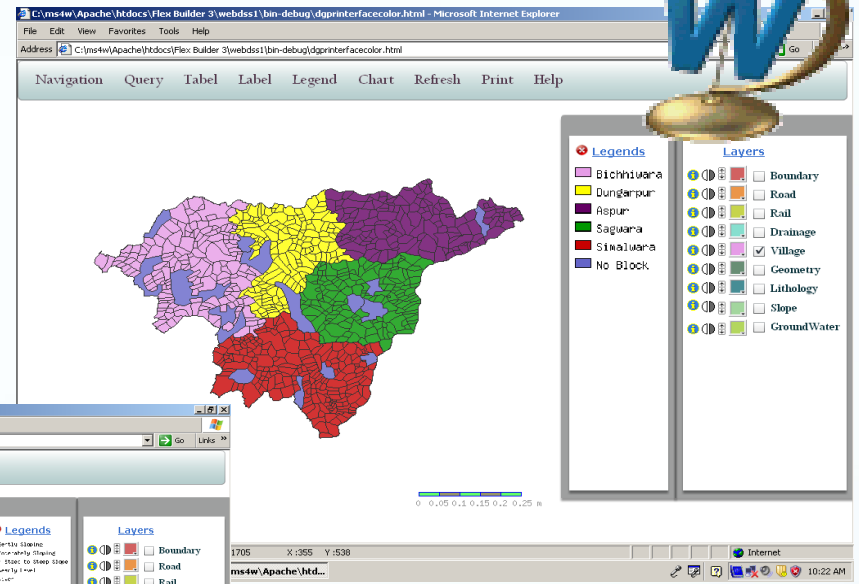
Done Internet

Start 4 Internet Explor... Flex Development - ... 4 Windows Explorer 3 Microsoft Office P... ArcView GIS 3.2a Address << 11:43 AM

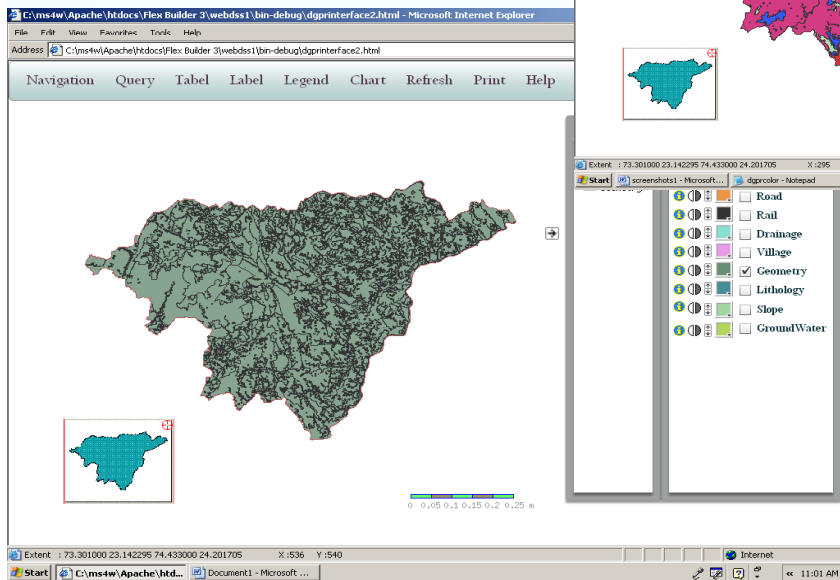
Thematic Layers



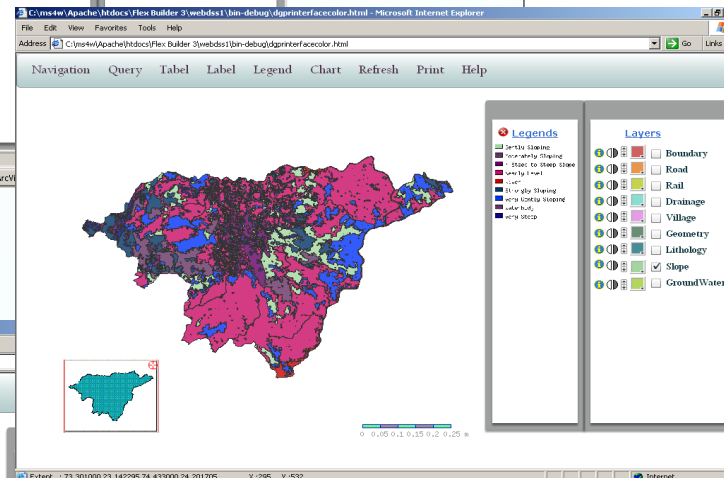
Road Layer



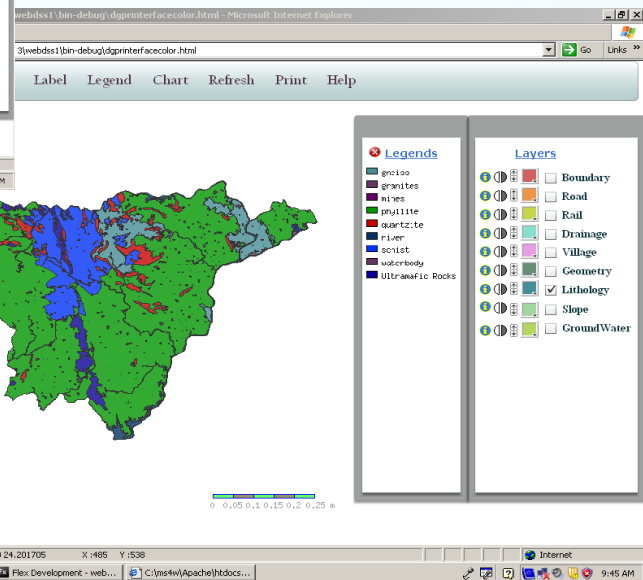
Village Layer



Geomorphology Layer



Slope Layer



Lithology Layer

Zoomed In map



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help

Zoom in

Extent : 73.447637 23.516253 74.013642 24.045963 X:259 Y:14

Start C:\ms4w\Apache\ht... Document1 - Microsoft ...

Legends

- Boundary
- Lithology

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- GroundWater

Zoomed Out Map

C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help

Zoom Out

Extent : 72.739641 22.589994 75.003661 24.708835 X:405 Y:532

Start C:\ms4w\Apache\ht... Document1 - Microsoft ...

Legends

- Boundary
- Lithology

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- GroundWater

0 0.1 0.2 0.3 0.4 0.5 m

Internet

11:33 AM

Data Extraction



Home Query Builder Table Label Legend Chart Refresh Print Help

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geomorphology
- Lithology
- Slope
- GroundWater
- Rastor
- Dungarpur

Refresh

Image Information

1 Band_1

Layer Info:

Total Layers : 4 Block Size: 64x64

Pixels : 4466 Scan Line : 3184

Map Info:

Upper Left : (332104.830, 2655667.497) (73d20\57.82"E, 24d 0\14.86"N)

Lower Left : (332104.830, 2580843.497) (73d21\28.28"E, 23d19\42.77"N)

Upper Right : (437055.830, 2655667.497) (74d22\51.96"E, 24d 0\42.36"N)

Lower Right : (437055.830, 2580843.497) (74d23\ 3.39"E, 23d20\ 9.40"N)

Pixel SizeX: 23.5000000 Pixel SizeY: -23.5000000 Unit: Meters Pixel Type: Byte

Projection Info:

Projection: UTM Zone: 43N Spheroid Name: WGS 84 Datum Name: WGS 1984

Statistics Info

Count: 14219744 Sum: 744520940 Mean: 52.358

Set Band Contrast

(R,G,B) 255,255,255 RGB Evaluate

Red : 255

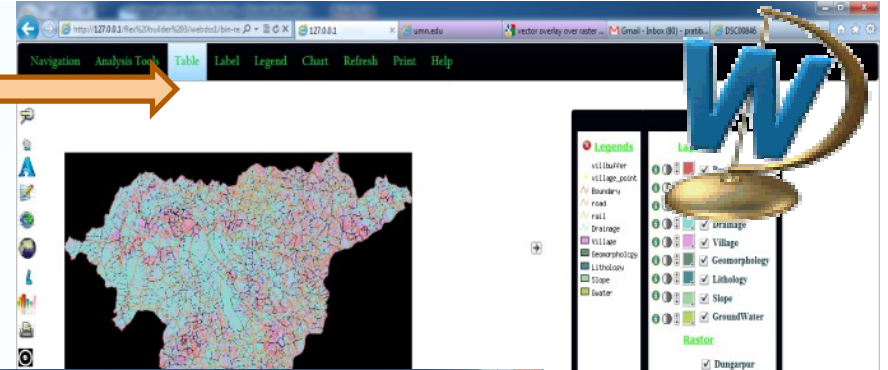
Green : 255

Blue : 255

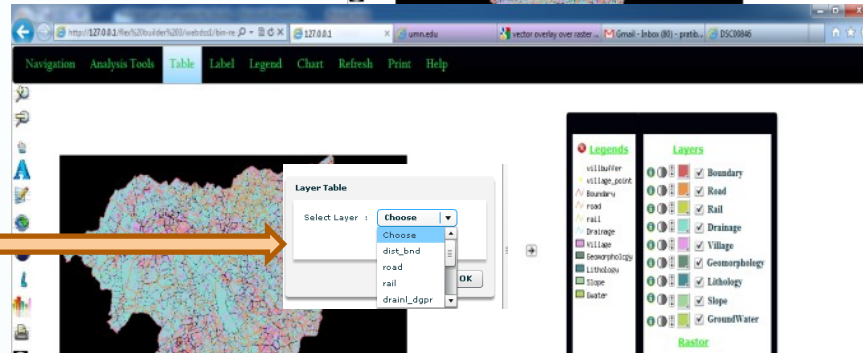
Reset Close

Populating Table

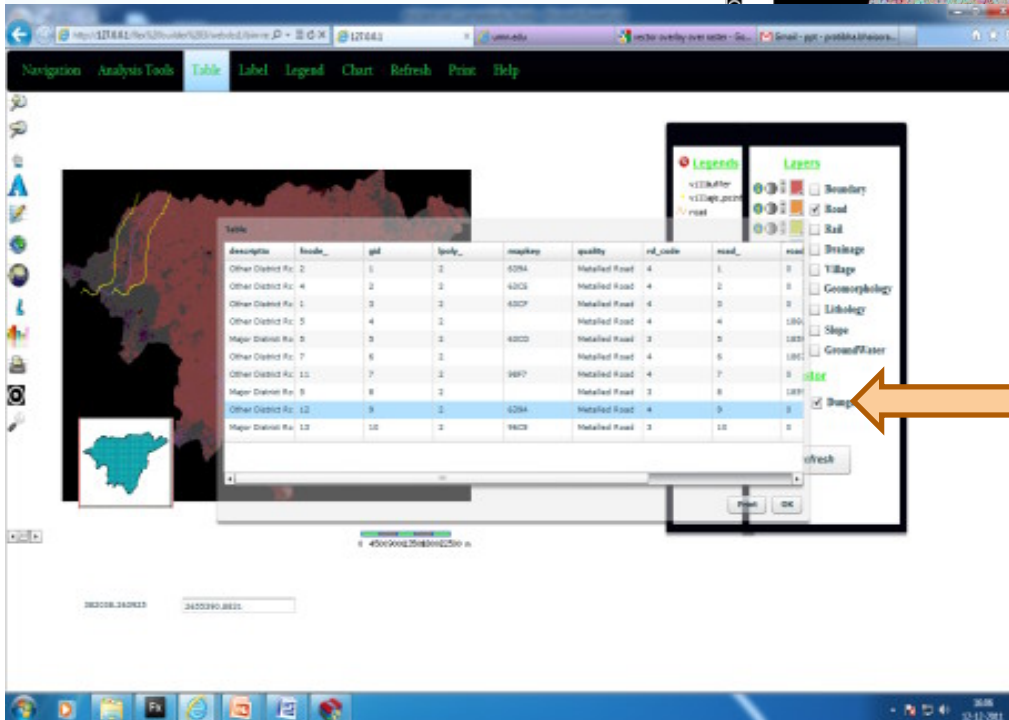
Step 1



Step 2



Tabular Result



Hospitals in village of block code0002



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Navigation Query Tabel Label Legend Chart Refresh Print Help

The map displays several village areas with labels: Khajooriya, Hathi, Seemal Ghati, Dhani Hathi, Bhojaton Ka Ora, Bara Hathi, Nayagaon, Patli, Wada Punali, and Pun. The 'Bara Hathi' area is highlighted in orange. A legend in the top right corner shows a red square for 'Result' and a brown square for 'Village'. A 'Query Builder' dialog is open, showing the following configuration:

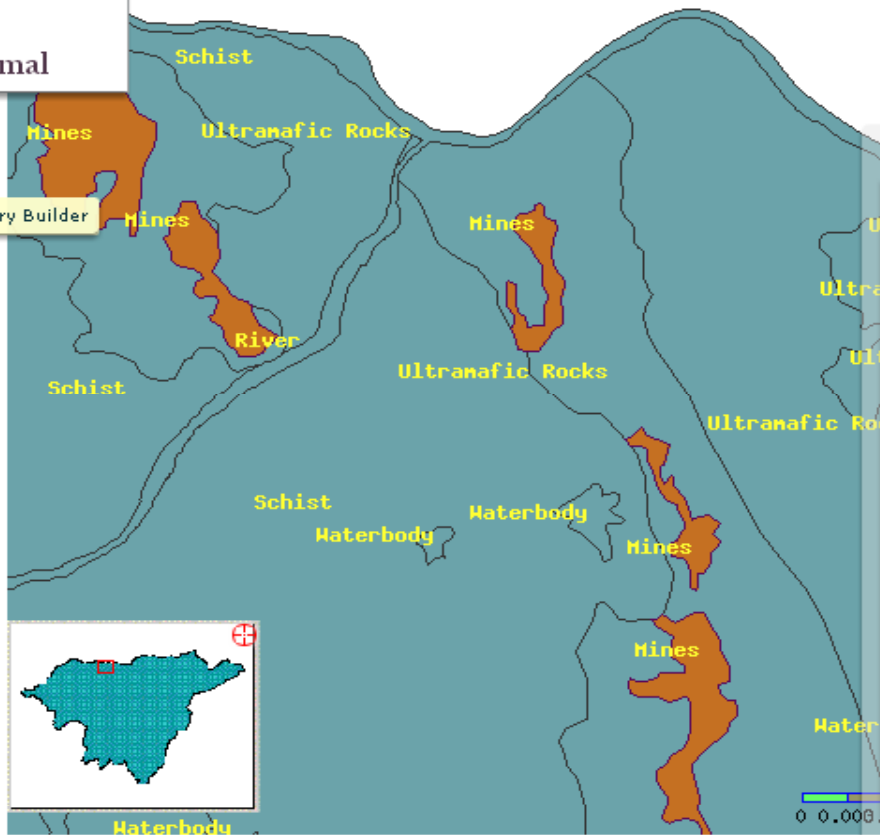
- Select type of query: Independent (selected)
- Select Thematic Layers: dgpr_vill
- Attributes: all_hosp
- Opr: =
- Value: 1
- More Operations: AND (selected), Union, Intersect
- SQL Query: `Select the_geom,gid from dgpr_vill where block_code=@0002@ AND all_hosp=@1@`
- Buttons: Submit, Reset, Table

Mining area in Dungarpur



Navigation Query Tabel Label Legend Chart Refresh Print Help

- ZoomIn
- ZoomOut
- Pan
- Normal



Legends

- Result
- Lithology

Query Builder

Select type of query.....

Independent Dependent

Select Thematic Layers : litho_dgpr

Attributes : lith_unit Opr : = Value : Mines

More Operations : AND Union Intersection

Select the_geom,gid from litho_dgpr where lith_unit=@Mines@

Submit Reset Table

Label Editor

Navigation Query Tabe**L** Legend Chart Refresh Print Help

File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Legend Editor

Select Layer : litho_dgpr

Select Label : lith_unit

Select Size : Tiny Small Medium

Select Position: Auto ul ur ll fr d cr cc

OK

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- GroundWater

Extent : 73.301000 23.142295 74.433000 24.201705 X:48 Y:275

Start C:\ms4w\Apache\ht... screenshots - Microsoft ...

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Navigation Query Tabe**L** Legend Chart Refresh Print Help

Navigation Query Tabe**L** Legend Chart Refresh Print Help

Legend

- Boundary
- Lithology

Layers

- Boundary
- Road
- Rail
- Drainage
- Geometry
- Lithology
- Slope
- GroundWater

Extent : 73.301000 23.142295 74.433000 24.201705 X:675 Y:508

Start C:\ms4w\Apache\ht... screenshots - Microsoft ...

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Legend Editor



Navigation Query Tabe**L** Legend Chart Refresh Print Help

File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Legend Editor

Select Layer : dgpr_vill

Layer Table

Select Layer : dgpr_vill

OK

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- GroundWater

Extent : 73.301000 23.142295 74.433000 24.201705 X:574 Y:267

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File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Navigation Query Tabe**L** Legend Chart Refresh Print Help

Navigation Query Tabe**L** Legend Chart Refresh Print Help

Legend

- Boundary
- Village

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- GroundWater

Extent : 73.301000 23.142295 74.433000 24.201705 X:773 Y:192

Start C:\ms4w\Apache\ht... screenshots - Microsoft ...

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Query Builder (Query on single layer-village)



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help

Query Builder

Select type of query.....

Independent Dependent

Select Thematic Layers : dgpr_vill

Attributes : phone Opr : = Value : 1

More Operations : AND Union Intersection

Select the_geom,gid from dgpr_vill where phone=@1@

Submit Reset Table

See the query result.

OK

Extent : 79.295435 29.643000 80.340565 30.350000 X :267 Y :536

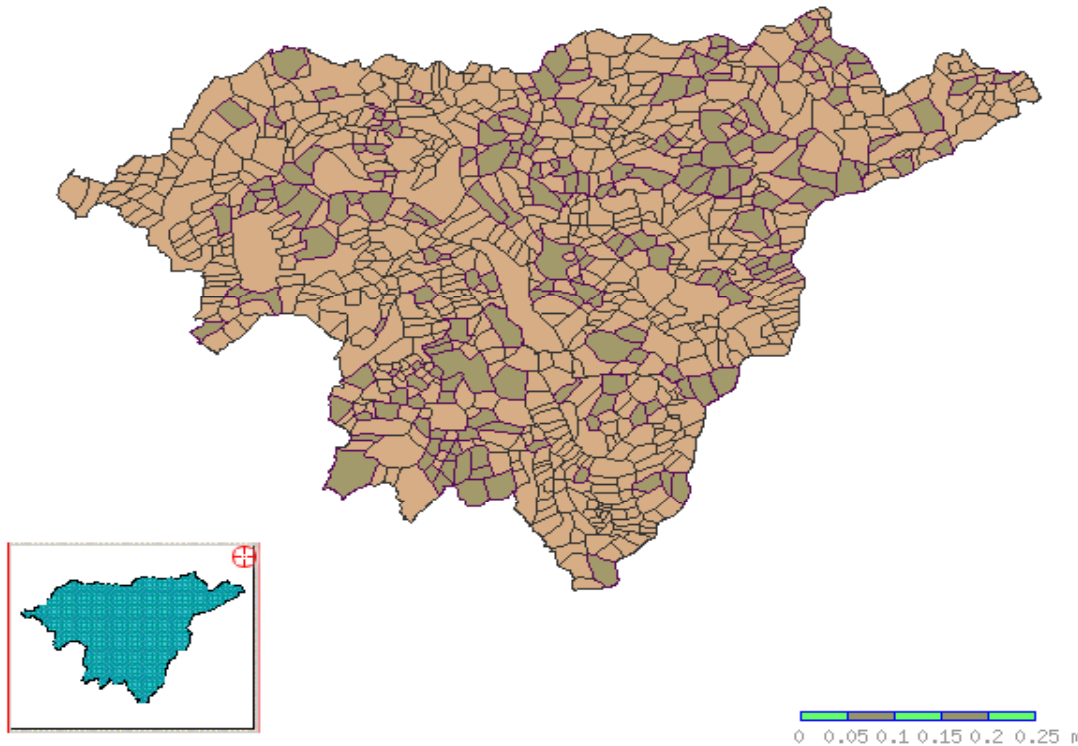
Start C:\ms4w\Apache\htd... screenshots - Microsoft ... Internet << 12:24 PM

Result of query (shows villages where phone facility =1)



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabe Label Legend Chart Refresh Print Help



Legends

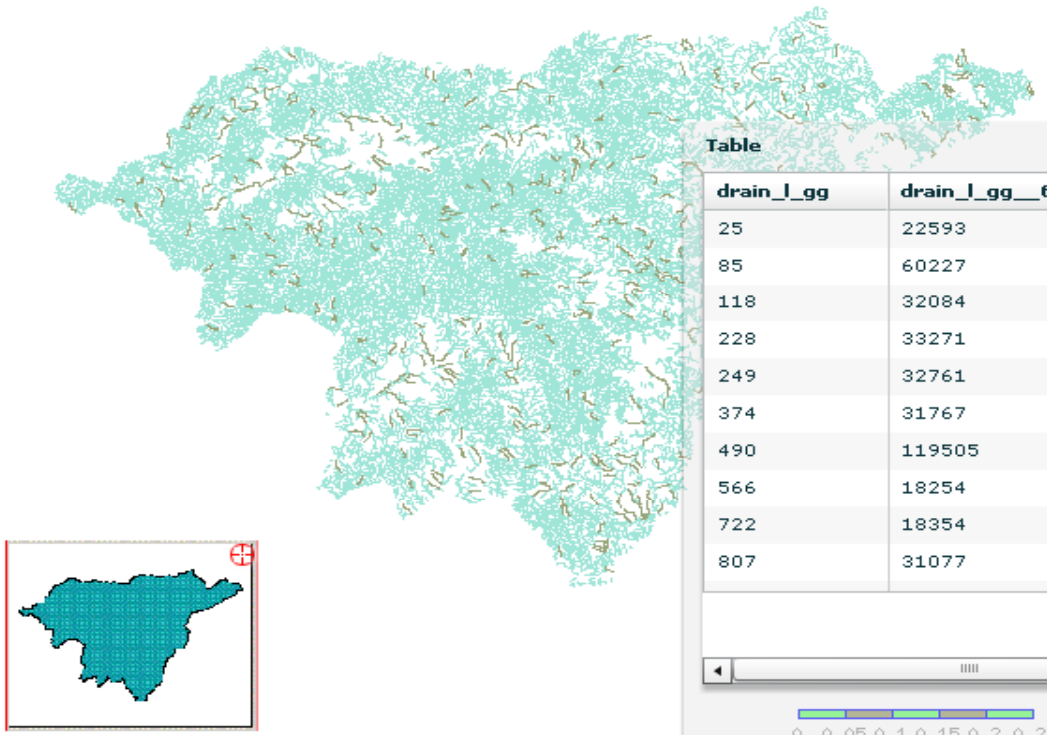
- Result
- Village

Tabular result of the query



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help



Legends

- Result
- Drainage

Table

drain_l_gg	drain_l_gg__6	drain_orde	fnode_	gid	leng
25	22593	1	39	25	0.0:
85	60227	1	129	85	0.0:
118	32084	2	174	118	0.0:
228	33271	3	318	228	0.0:
249	32761	1	133	249	0.0:
374	31767	1	497	374	0.0:
490	119505	3	422	490	0.0:
566	18254	2	319	566	0.0:
722	18354	2	808	722	0.0:
807	31077	1	745	807	0.0:

0 0.05 0.1 0.15 0.2 0.25 m

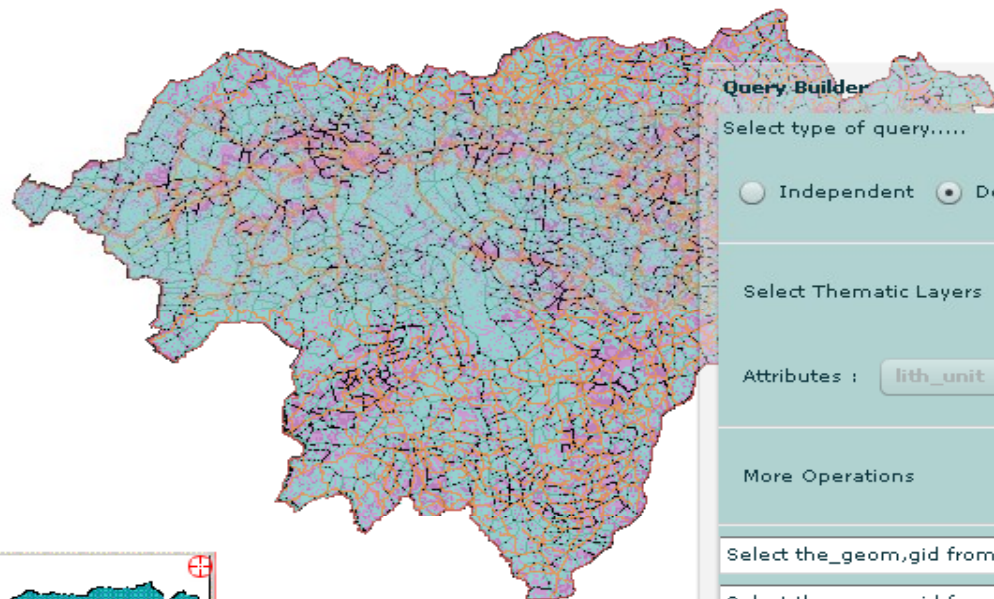
Print OK

Query on multiple layers



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html

Navigation Query Tabel Label Legend Chart Refresh Print Help



Legends

- Boundary
- road
- rail
- Urainage
- Willage

Layers

- Boundary
- Road
- Rail

Query Builder

Select type of query.....

Independent Dependent

Select Thematic Layers : litho_dgpr

Attributes : lith_unit Opr : = Value : Granites

More Operations : AND Union Intersection

Select the_geom,gid from geom_dgpr where block_code=@2@

Select the_geom,gid from litho_dgpr where lith_unit=@Granites@

Submit Reset Table

See the query result.

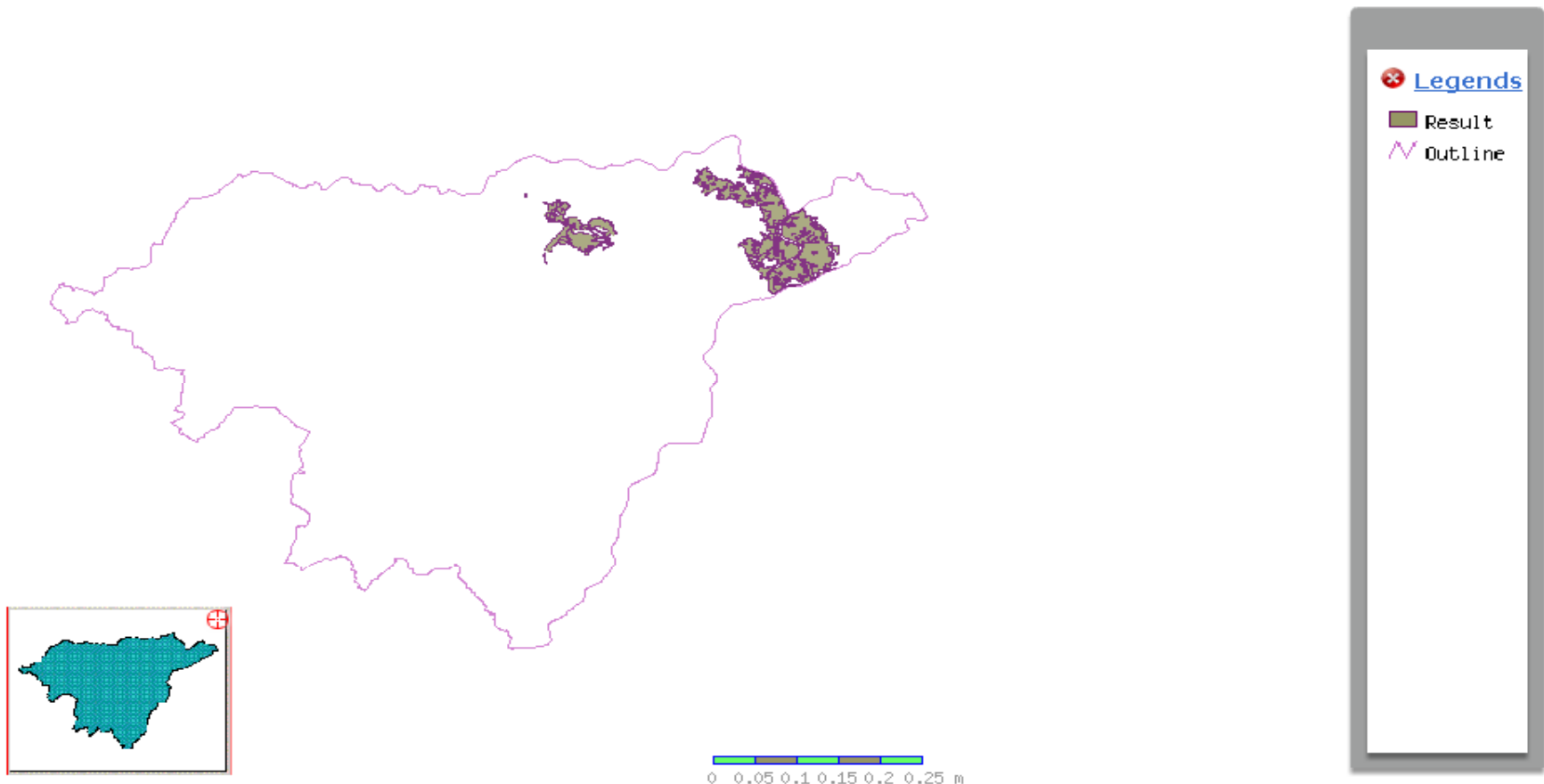
OK

Result of query (Intersection -> area where lith unit =Granites and block code=2)



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help



Extent : 73.301000 23.142295 74.433000 24.201705 X :554 Y :312
Start C:\ms4w\Apache\htd... screenshots - Microsoft ... Internet << 12:49 PM

Result of query (Union -> area where lith_unit =Gneiss or block_name=Dungarpur or Aspur)



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File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help

Legends

- Result
- Outline

Query Builder

Select type of query.....

Independent Dependent

Select Thematic Layers : litho_dgpr

Attributes : lith_unit Opr : = Value : Gneiss

More Operations : OR Union Intersection

Select the_geom,gid from geom_dgpr where block_name=@DUNGARPUR@ OR block_name=@Aspur@

Select the_geom,gid from litho_dgpr where lith_unit=@Gneiss@

Submit Reset Table

Extent : 73.301000 23.142295 74.433000 24.201705 X :269 Y :386

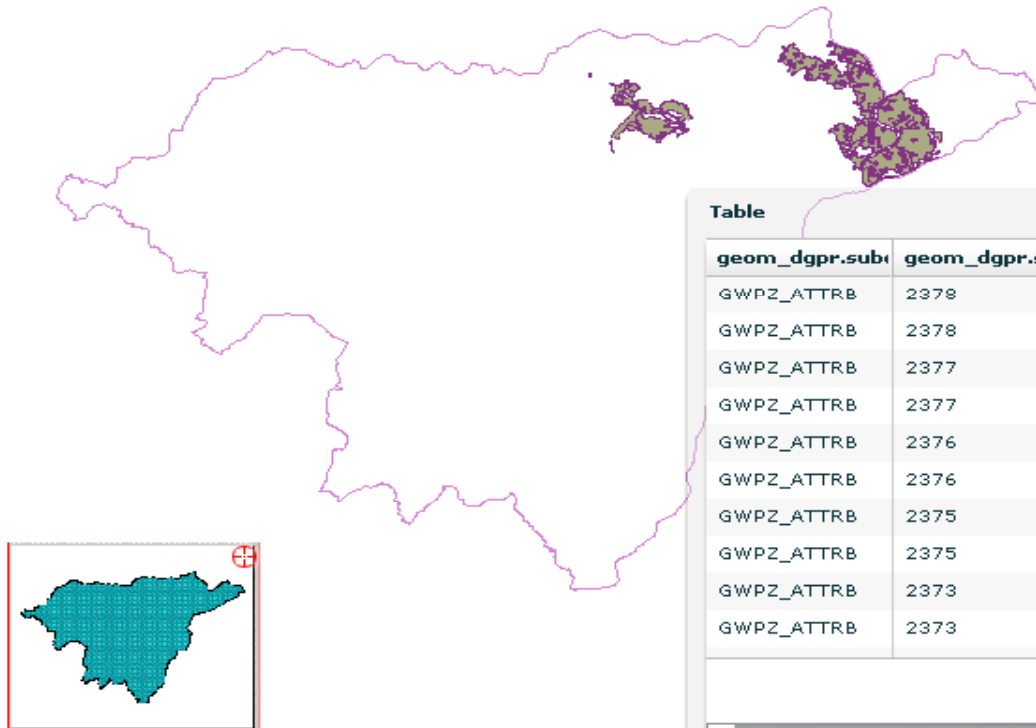
Start C:\ms4w\Apache\htd... screenshots - Microsoft ... Internet << 1:19 PM

Tabular Result of Query



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend Chart Refresh Print Help



Legends
Result
Outline

Table

geom_dgpr.sub	geom_dgpr.sub	geom_dgpr.sub	litho_dgpr.area	litho_dgpr.gid	lith
GWPZ_ATTRB	2378	0	6e-005	340	07
GWPZ_ATTRB	2378	0	0.00011	375	07
GWPZ_ATTRB	2377	2	6e-005	340	07
GWPZ_ATTRB	2377	2	0.00011	375	07
GWPZ_ATTRB	2376	3	6e-005	340	07
GWPZ_ATTRB	2376	3	0.00011	375	07
GWPZ_ATTRB	2375	0	6e-005	340	07
GWPZ_ATTRB	2375	0	0.00011	375	07
GWPZ_ATTRB	2373	5	6e-005	340	07
GWPZ_ATTRB	2373	5	0.00011	375	07

Print

OK

Statistical Representation Pie Chart (Showing area distribution for Lithology)



C:\Documents and Settings\ND\My Documents\Flex Builder 3\webdss1\bin-debug\Dgpr_Main_Interface. - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Print Print Print Kazulah

My Web Search Search Address settings\ND\My Documents\Flex Builder 3\webdss1\bin-debug\Dgpr_Main_Interface.html Go Links I >>

Google Search Share Sidewiki Check Translate Sign In

Navigation Query Tabel Label Legend **Chart** Refresh Print Help

Chart

Quartzite: 6% (0.02661)

Layers

- Boundary
- Road
- Rail
- Drainage
- Village
- Geomorphology
- Lithology
- Slope
- GroundWater

OK

Done Start

Windows Exp... ArcView GIS 3.2a Flex Developmen... Address << 3:14 PM

Done Start 4 Internet Ex... 5 Microsoft Off... 2 Wordpad 3 Windows Exp... ArcView GIS 3.2a Flex Developmen... Address << 3:15 PM

Bar Chart (Showing area distribution of geom units in each bloc)



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File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query Tabel Label Legend **Chart** Refresh Print Help



Printing of Map



C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address C:\ms4w\Apache\htdocs\Flex Builder 3\webdss1\bin-debug\dgprinterface2.html Go Links >>

Navigation Query TabeL Label Legend Chart Refresh Print Help

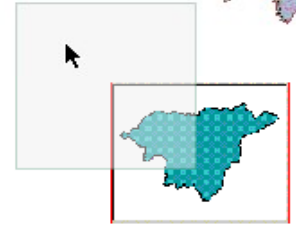
Print

- Boundary
- road
- rail
- Drainage
- Village
- Geometry
- Lithology
- Slope
- Water

0 0.05 0.1 0.15 0.2 0.25 m

ok

Repositioning of map elements



Extent : 73.301000 23.142295 74.433000 24.201705 X : 270 Y : 503

Start C:\ms4w\Apache\htd... screenshots - Microsoft ... untitled - Paint Internet

2:46 PM

THANKS